Overview of the Advanced RTU Campaign for the Midwest Energy Efficiency Alliance

September 16, 2014
Advanced RTU Campaign

- Launched May 30, 2013
- Runs through 2015
- Promote high-efficiency RTU solutions
  - High-efficiency replacements and new installations
  - Advanced control retrofits
  - Quality Installation and Quality Maintenance

www.advancedrtu.org
Why Are RTUs Important?

- RTUs cool over 60% of U.S. commercial building floor area
- Consume 4.3 Quads annually
- Large stock of 10 to 20 year old RTUs
What Can we do with all these RTUs?

- Planned replacement with high-efficiency RTUs
  - Consider for all RTUs > 10 years old
- Retrofit with variable speed controls
  - Consider for RTUs > 7 tons and < 10 years old
What is a High-Efficiency RTU Replacement?

- Replacement before failure
- High Efficiency = CEE Tier 2 and above

Example: 10-ton RTU

<table>
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<tr>
<th></th>
<th>90.1-1999</th>
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<th>90.1-2004</th>
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<th>CEE Tier 2</th>
<th>RTU Challenge</th>
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<td>11.2</td>
<td>12</td>
<td>13.8</td>
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Credit: Michael Deru

Credit: Ian Doebber
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<td>13.8</td>
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<tr>
<td>7.3</td>
<td>8.7</td>
<td>9.0</td>
<td>10.5</td>
<td></td>
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<td>➡ degraded performance in 2014</td>
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What are Advanced Retrofit Controls?

- **Essential features:**
  - Variable or multi-speed fan control
  - Integrated economizer control
  - Demand controlled ventilation

- **Additional features:**
  - Variable capacity compressors
  - Fault detection and diagnostics
  - Remote monitoring

Reduce RTU energy by over 50% with a 1-4 year payback
RTU Evaluation Process

Gather Information

- **Initial RTU Inventory**: RTU Inventory Spreadsheet
- **Preliminary Screening**: Bin RTUs for retrofit, replacement, or no action
- **Detailed Inventory**: RTU Inventory Spreadsheet
- **Visual-Based Field Evaluation**: RTU Field Evaluation Checklist

Analyze

- **Analysis**: make the business case and prioritize actions. RTU Incentives Database, RTU Comparison Calculator, 179D DOE Calculator, RTU Sizing Guidance, and ARC Case Studies

Plan

- **Project Planning**: See the list of ARC Supporting Partners

Take Action

- **Procurement**: Procurement Specifications for guidance
- **Measurement and Verification (M&V)**: Use the M&V Guidance
How to Join the Advanced RTU Campaign

Join as a Participant

Building owners and managers with influence over building O&M

- Pledge to evaluate existing RTUs for implementation of replacement or retrofit
- Agree to be listed on the Campaign website as a Participant
- If applicable, evaluate your energy savings potential and share this information with the Campaign
- If applicable, submit documentation of RTU replacements or retrofits to earn an Award that demonstrates your leadership in building energy efficiency

Join as a Supporter

Organizations that provide technical services and products, electric utilities, or regional efficiency organizations

- Spread the Campaign’s message
- Recruit Participants and Supporters
- Offer resources to help building owners and managers improve their buildings' efficiency
- Share data from energy efficient RTU replacement / retrofit cases
- Earn Awards for significant involvement with the Campaign
Contact Information

www.AdvancedRTU.org

- Michael Deru, National Renewable Energy Laboratory
  - Michael.deru@nrel.gov
  - 303-384-7503

- Marta Milan Schantz, Waypoint Building Group
  - martaschantz@waypointbuilding.com
  - 231-598-2332
Midwest Programs and Incentives

Advanced RTU Campaign Webinar

September 16, 2014
Midwest Energy Efficiency Alliance (MEEA)

• MEEA is a collaborative network whose purpose is to advance energy efficiency to support sustainable economic development and environmental preservation.

• Founded in 2000 to bring strategic partners together to improve market conditions for energy efficiency.
MEEA Membership

• 146 Current Members:
  - State and Local Governments
  - Utilities: Investor-Owned, Municipal and Cooperatives
  - Academic and Research Institutions
  - Energy Service Companies
  - Manufacturers and Retailers
  - Contractors
  - Consultants for Profit and Nonprofit Organizations
MEEA’s Role in the Midwest

• Nonprofit serving 13 Midwest states: IL, IN, IA, KS, KY, MI, MN, MO, NE, ND, OH, SD, WI

• Actions:
  – Advancing Energy Efficiency Policy
  – Facilitating Energy Efficiency Programs
  – Coordinating Utility Program Efforts
  – Delivering Training & Workshops
  – Evaluating & Promoting Emerging Technologies
  – Promoting Best Practices
Agenda

• Overview of RTU efficiency program offerings throughout the Midwest
• HVAC SAVE Program
• Building Operator Certification Program
RTU Incentives in the Midwest

• Illinois
  – ComEd’s *Smart Ideas for Your Business*® Program
    • Offers cash incentives for implementing efficiency upgrades
    • Packaged RTU Advanced Controls Retrofit: offers $100/ton
    • Air-Side Economizer Retrofit: offers $50/ton
    • HVAC Incentive Worksheet and Application:
      [https://www.comed.com/business-savings/programs-incentives/Pages/hvac.aspx](https://www.comed.com/business-savings/programs-incentives/Pages/hvac.aspx)
RTU Incentives in the Midwest

• Indiana and Ohio
  – Duke Energy’s Smart $aver® Incentive Program
    • Provides cash incentives for efficiency upgrades
    • Unitary or Rooftop AC: offers up to $40/ton
    • IN Application:
    • OH Application:
RTU Incentives in the Midwest

• Kansas and Missouri
  – KCP&L MO and GMO Standard Rebates
    • Programs offer rebates for equipment retrofits/replacements
    • Unitary or Rooftop AC: offering $40/ton
    • KCP&L MO Program: http://kcpl.programprocessing.com/content/prescriptiverebates
    • KCP&L GMO Program: http://kcpl.programprocessing.com/content/meeiaprescriptive
RTU Incentives in the Midwest

• Kentucky
  – Duke Energy’s Smart $aver® Incentive Program
    • Provides cash incentives for efficiency upgrades
    • Unitary or Rooftop AC: offers up to $40/ton

  – Louisville Gas & Electric’s Commercial Rebate Program
    • Offers equipment rebates up to $30/ton
RTU Incentives in the Midwest

- Iowa, Minnesota, North Dakota, South Dakota
  - Bright Energy Solutions Program
    - Provides cash incentives for equipment upgrades
    - Unitary Single Packaged AC, RTUs: offers $50/ton
    - Incentive Application:

- Wisconsin
  - Focus on Energy
    - RTU Optimization Incentives
    - Summary of Services and Incentives:
HVAC SAVE: System Adjustment & Verified Efficiency®

• Utility sponsored HVAC contractor training and certification initiative
• Teaches the skills necessary to determine actual effective efficiency of any functioning HVAC system
• Includes hands on demonstrations on how to perform critical HVAC diagnostics
• Program metrics:
  – 1,940 Contractors Certified
  – 17,000 HVAC Save Installations
  – Iowa and Illinois
• HVAC SAVE Website: http://www.hvacsave.com/
Building Operator Certification® (BOC)

- MEEA facilitates training and certifying of building operators in energy management
- Program started in 2003 – present
- Targets building operator professionals and underemployed veterans
- Program Metrics:
  - 734,000 therms; 274 million kWh saved
  - 3,600+ grads
  - 189 series held
  - 9 states; 50+ partners
- BOC Website: http://www.boccentral.org/
THANK YOU

Cassandra Kubes
Policy Associate
ckubes@mwalliance.org
www.mwalliance.org
FOCUS ON ENERGY
BUSINESS PROGRAMS

ADVANCED RTU CAMPAIGN
WEBINAR
SEPTEMBER 16, 2014

Matthew Matenaer
Program Manager
Focus on Energy
WHAT IS FOCUS ON ENERGY?

Wisconsin utilities’ statewide program for energy efficiency and renewable energy
WHY FOCUS ON ENERGY?

• Focus on Energy has saved Wisconsin residents and businesses over $2.89 for every dollar spent

• Since 2001 Focus on Energy has helped 2.7 million Wisconsin residents and businesses save over $730 million in energy costs

• Over 1,700 business partner with Focus on Energy as Trade Allies
ROOFTOP OPTIMIZATION OFFERING

- Basic Programmable Thermostat = $40
- Advanced Programmable Thermostat = $100
- Economizer = $250
- CO2 Demand Controlled Ventilation (DCV) = $400

- Additional Incentives for RTUs:
  - Variable Frequency Drive (VFD) = $50/hp
  - Energy Recovery Ventilator (ERV) = $0.75/CFM
## IMPLEMENTATION TRENDS – DEMAND CONTROL VENTILATION (DCV)

### Demand Control Ventilation
(Applicable to 100% of Respondents)

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Implemented - All Stores</td>
<td>13%</td>
</tr>
<tr>
<td>Implemented - Select Stores</td>
<td>6%</td>
</tr>
<tr>
<td>Implemented - Remodels + New</td>
<td>6%</td>
</tr>
<tr>
<td>Implemented - New Stores Only</td>
<td>13%</td>
</tr>
<tr>
<td>Plan to Implement &lt; 2 Years</td>
<td>6%</td>
</tr>
<tr>
<td>Considering, No Plan</td>
<td>13%</td>
</tr>
<tr>
<td>Not Considering</td>
<td>44%</td>
</tr>
</tbody>
</table>
Feasibility study to determine savings potential with DCV strategy:

- Monitored store for a week with CO2 monitors
- Compared against usage history
- 20-30% gas usage reduction was estimated
- Cost to implement $7,000 – floor space considered a ‘single zone’
- Payback around 8 months with incentives
- Other findings
Replaced 12 RTUs:

- Average tons/unit is 10 tons.
- DCV incentive $400/unit
- Qualifying RTU incentive $50/Ton
- Total Incentive is $10,000
- Cost is $95,000
UPGRADING EMS SYSTEM

- Upgrading EMS for demand response capabilities.
- Reduced monthly costs – but no incentive
- Added DCV controls while upgrading EMS
- $400 per RTU incentive to add DCV
- Rebate money used to help pay for EMS upgrade and DCV controls.
- Average cost of project $5,000
- Incentive was $4,000
- Payback – 3 months.
CONTACT FOCUS ON ENERGY

Call: 800.762.7077

E-mail: focusinfo@focusonenergy.com

Visit: www.focusonenergy.com

/FOCUSONENERGY
Thank you!

**Advanced RTU Campaign**

*advancedRTU.org*

- Michael Deru, michael.d eru@nrel.gov
- Marta Schantz, martaschantz@waypointbuilding.com

**MEEA**

*mwalliance.org*

- Cassandra Kubes, ckubes@mwalliance.org

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*focusonenergy.com*

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